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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/771,997	02/04/2004	Osamu Nozawa	0524-0139.01	4072

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EXAMINER

MCDONALD, RODNEY GLENN

ART UNIT	PAPER NUMBER
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1795

MAIL DATE	DELIVERY MODE
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12/27/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/771,997

Applicant(s)

NOZAWA ET AL.

Examiner

Rodney G. McDonald

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30-36 and 40-43 is/are rejected.
- 7) ☒ Claim(s) 37-39 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 23, 2007 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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Claims 30-33 and 40-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohno et al. (U.S. Pat. 4,975,168) in view of Tu et al. (U.S. Pat. 5,714,285) and Yamanishi et al. (U.S. Pat. 5,626,727).

Regarding claims 30 and 40, Ohno et al. teach an apparatus for forming a thin film on each of a plurality of substrates. (Column 6 lines 33-36; Fig. 7) A sputtering chamber 1b for carrying out sputtering to form the thin film on a surface of each substrate in a sputtering time. (Column 4 lines 66-68; Column 8 lines 26-36) A conveyor 3b for conveying each of the plurality of substrates one by one for introducing each of the substrates into the sputtering chamber 1b having one sputtering target 18 therein. (Column 6 lines 32-33; Column 5 lines 65-66) The conveyor is capable of conveying one substrate at a time to introduce the substrate in the sputtering chamber so that the sputtering time for carrying out the sputtering for a substrate and an interval time which runs from an end of sputtering for one substrate to a start of sputtering for a next substrate are respectively made constant. (Column 8 lines 31-35; i.e. keeping the film formation time constant) (The time between sputterings would be constant since the substrates are moved in a linear fashion from load lock to processing to output load lock.)

Regarding claims 30, 31, 42, Ohno et al. teach a first load lock mechanism solely for introducing the substrate into the sputtering chamber and a second load lock mechanism solely for discharging the substrate with a film formed thereon in the sputtering chamber, wherein the first load lock mechanism is capable of keeping a substrate subject to the film forming on standby until a substrate with film formed

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thereon by a previous film forming is transferred to the second load lock mechanism.

The load locks accept one substrate at a time. (Column 5 lines 63-68; Column 5 lines 1-4; Column 6 lines 3-36; Column 7 lines 15-44)

Regarding claim 32, 41, Ohno et al. teach that each of the first load lock mechanism and the second load lock mechanism comprises a load lock chamber, and the load lock mechanism is capable of venting from making the inside room of the load lock chamber into atmospheric pressure for transferring the substrate outside, evacuating the inside room of the load lock chamber up to a predetermined degree of vacuum for transferring the substrate with, the sputtering chamber, and wherein the load lock chamber accepts one substrate at one time, so that introducing each substrate into and discharging each substrate from the sputtering chamber be continuously made at a constant interval. (Column 5 lines 63-68; Column 5 lines 1-4; Column 6 lines 3-36; Column 7 lines 15-44)

Regarding claim 43, Ohno et al. teach the pressure can be $5 * 10^{-5}$ Torr.
(Column 6 lines 29)

The difference between Ohno et al. and the present claims is that making photomask blanks is not discussed (Claims 30, 40), the substrate holder is capable of holding the substrate in a horizontal state, and the substrate holder and the target holder are placed so that the target be held opposite to the substrate, a center axis of the target deviating from a center axis of the substrate is not discussed (Claim 33) and the substrate having a rotating mechanism is not discussed (Claim 33).

Regarding claims 30, 40, Tu et al. teach forming a photomask blank having at least a thin film for forming a pattern on a transparent substrate. (See Abstract)

Regarding claim 33, Tu et al. teach forming a photomask blank having at least a thin film for forming a pattern on a transparent substrate. (See Abstract) The process comprises setting a substrate 22 in a horizontal position where a surface of the substrate and a surface of a sputtering target are in opposed positions with a center axis of the target deviating from the center axis of the substrate surface. (See Figure 5; Column 4 lines 4-35) The target and the substrate form a predetermined angle therebetween. (See Figure 5)

The motivation for utilizing the features of Tu is that it allows formation of a photomask. (See Abstract)

Regarding the rotating (Claim 33), Yamanishi et al. teach rotating a substrate holder when opposed to targets offset from the axis of the substrate and angled thereto. (Column 7 lines 17-31)

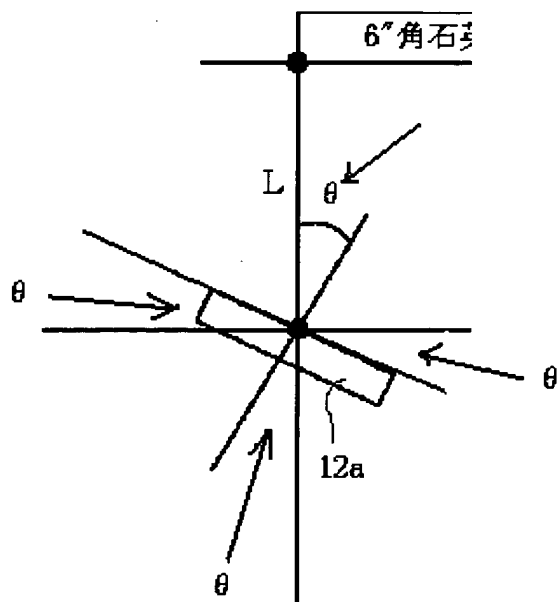
The motivation for utilizing a rotating substrate holder is that it allows for controlling the uniformity of the thin film deposited. (Column 7 lines 17-25)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Ohno et al. by utilizing the features of Tu et al. and Yamanishi et al. because it allows formation of a photomask with a uniform film.

Claims 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohno et al. in view of Tu et al. and Yamanishi et al. as applied to claims 30-33 and 40-43 above, and further in view of Satoshi (Japan 10-303172).

The differences not yet discussed are the predetermined angle (Claim 34), the angle being 10 to 30 degrees (Claim 35) and the angle being 10 to 15 degrees (Claim 36).

Regarding the angle (Claims 34-36), Satoshi teach providing the opposite surface of the substrate and the target at 10 to 60 degrees for forming photomask blanks. (See Machine Translation 0015; Fig. 4; Annotated Fig. 4 below)



The motivation for utilizing a particular angle is that it allows for improving the distribution of the film in the plane of the substrate. (See Abstract)

Therefore, it would have been obvious to deposit at a particular angle as taught by Satoshi because it allows for improving the distribution of the film in the plane of the substrate.

Allowable Subject Matter

Claims 37-39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claims 37-39 are indicated as being allowable over the prior art of record because the prior art of record does not teach the combination claims 30 and 33 with the subject matter of claim 37 which includes the limitation of wherein the substrate holder is rotatable around its center axis and the number of rotations of the substrate is controlled to be an integer during film formation.

Response to Arguments

Applicant's arguments filed October 23, 2007 have been fully considered but they are not persuasive.

In response to the argument that the prior art of record does not teach a load lock chamber capable of receiving one substrate at a time for a constant time interval, it is argued that Ohno et al. teach providing a load lock chamber capable of receiving one substrate at a time for a constant time interval. (See Ohno et al. discussed above)

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Regarding the obviousness type double patenting rejection of the previous Final Rejection April 26, 2007. Application No. 10/821,508 has matured into U.S. Pat. 7,282,121. Claims of U.S. Pat. 7,282,121 relate to a method of producing a photo mask blank as such the method of producing a photo mask blank does not read upon an apparatus for producing a photo mask blank as claimed in the present application. With this consideration the Examiner has withdrawn the obviousness type double patenting rejection.

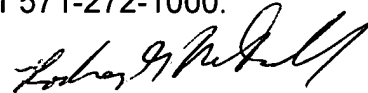
New claim 43 has been rejected as discussed above over newly cited Ohno et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M-Th with every Friday off..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Rodney G. McDonald
Primary Examiner
Art Unit 1795

RM
December 17, 2007